

RADIO

GAZETTE

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Microphone Display

"The Peoples Choice"©



Special Index Issue:
"The First Twenty Years"

The Antique Radio Gazette is the official publication of The Antique Radio Club of America, Inc.

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Plus all of your regular featured articles

The President's Page

I wish that within the limited space of this message I could convey to all of our members, who missed ARCA '93, that you have missed an event that revisited our radio heritage like no other before.

On Thursday afternoon I walked into the "Old Equipment" display room, and from that point on I felt, even though I had attended dozens of such events previously, that I had never seen such a fantastic display before and surely will not see one to equal this one again. In the next couple of issues we will bring as much convention coverage to you as we can.

The participants spent countless hours in documentation, building displays and polishing to bring this on-the-road display to us. ARCA has dedicated itself to the historical preservation of radio and the members demonstrated their ability to meet the high standards of these commitments.

The tour of the **Museum of Radio & Technology** gave many an unexpected surprise, not only in the enormous size of the facility, but of the amount of work that has been done by such a small, dedicated group of people. The amount of equipment and related technology that has been accumulated in such a short span of time, one can quickly see the bright future of this effort. To you who missed this, you can still catch this shining star. Come see us in Huntington, WV and become a member of the **Museum**.

Our awards ceremony and banquet on Friday evening is always a rewarding event. To a room packed full of dedicated historians, they will not soon forget the many exquisite plaques, ribbons, trophies and dozens of door prizes. Long live the "**Ghosts of Radio Past**". This one-hour play, produced and directed by **Jim Duffield**, also starred **Mr. Duffield** and radio announcer **Randy Damron**. This play was also assisted by **Jim Damron**, **Chris Spradling**, and **Patsy McIntyre**. It is my hope this play can be produced for Public Television. Perhaps a series of such dramas could go a long ways in helping our young people, as well as adults, understand the inventors of this thing called "radio". A tremendous thanks to **Mr. Duffield**, who is also on the staff of the **Museum**, for the hundreds of hours of time, and at great personal expense, for bringing this great evening to such a climatic conclusion.

Not to be overlooked was the **Ladies** program entitled, "**The Ladies Collector Corner**". In only its second year, it has turned into a big attraction for everyone. The Ladies tours also were designed to give all who wished to participate a taste of local culture.

The conclusion of these tours was finalized on Friday afternoon by a visit to a private Museum. **Perry's Americana Museum of History** was both a surprise and very educational. One is to be complemented for such a personal, dedication to the history of the pioneers of this great nation. The American spirit was born from the hard work and dedication of its people. Here in this museum that spirit lives.

The seminar presentations all could have each used another hour. They were well attended and audience participation was high. A lot of new ideas were proposed, and I look forward to these seminars producing lasting benefits for our members.

As always it is a little sad to bring great event such as this to a close, but there is excitement as everyone anticipates the announcement of the location of the next year's convention. In grand style, our host for next year provided favors and gifts from the great State of Arkansas. Little Rock, located on the banks of the Arkansas River, and the Riverfront Hilton Inn, will be the site of ARCA '94. Little Rock - "full of surprises". Thanks to our newest chapter, the **Arkansas Antique Radio Club** and **Tom Burgess** for extending this invitation.

I would like to extend my personal thanks to our new writers. Many of you are discovering how easy it is to write about something that you love to work with. Our staff can edit and put your articles into published form, just give us the opportunity. Thank you for being a part of ARCA and enjoy the summer vacation months. Drive and arrive safely. We do not want to lose a single member because of a careless moment.

Lloyd McIntyre
President

1st Annual Radio RX For Spring Fever '93

It's over and what a lot of effort Bill Dawson put into this project! The framework for the 2nd RX has been laid.

No one knew how this would all come out, the mistakes that would be made, the bases not completely covered. Now we have a fee for what the attendees and vendors want to see next year. There will be additional clubs involved with the Niagara Frontier Wireless Association (NFWA) stating their desire to join us next year.

Now to the hard figures of what really happened. Approximately 150-175 people, this includes wives, attended. There were 37 paid vendors. The gross results were \$673.00 gate receipts and \$2,200.00 auction receipts. Net expenses were \$157.00 advertising, \$60.00 postage, and \$200.00 rental of fairgrounds. There was several hundred dollars worth of donated Radios and other goods. To those people our sincere thanks.

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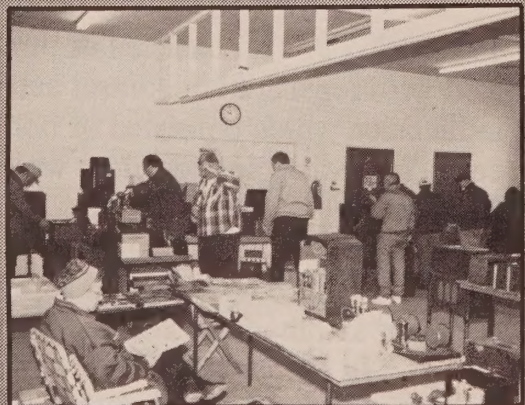
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THE REINARTZ TUNER

Bill Hurni W3HWT

In the late teens and early twenties amateurs began to become aware of the value of the shorter wavelengths for radio communications. As they attempted to apply their old receiving instruments to these new wavelengths they were found to be inadequate in terms of both sensitivity and selectivity. Also at this time, an appreciation of the electrical losses associated with the earlier equipment were beginning to be appreciated as it was applied to the shorter waves. The conversion of transmitting apparatus from wide band spark to narrow band CW added additional impetus to improved tuner design. Ultimately this new concept in design would be termed "low Loss" but in 1921 it had not yet been so universally recognized as to be given a name. Things such as proper capacitor construction, elimination of coil taps, use of heavy gauge solid wire for coils and proper coil form design fell under this concept.

The Reinartz Tuner was significant step in this new design idiom and was popularized by a series of articles in QST in 1921 and 1922{1,2,3}. It was not that this new tuner was so difficult to describe that it could not be done with a single paper. Radio amateurs were at the cutting edge of this new technology. These series of articles on the Reinartz Tuner represent modifications to the original design over a period which actually carried forward through the mid twenties as new understanding allowed additional improvements to the basic design. This was a dynamic technology with new designs being tested in the field on a large scale over very short periods of time by radio amateurs. The effective designs were immediately adopted by amateur operators as opposed to the commercial interests who lagged significantly behind. While only suggested by comments in QST, the dynamic nature of this technological revolution became apparent in the mid 1920's when QSL cards came into common use. These cards when studied reveal the rapidity (measured in weeks) with which innovations were adopted for common use by radio amateurs.

The first version of the Reinartz Tuner was described in June 1921 QST{1}. It consisted of three coils. Two of the coils were associated with regeneration control and were placed on either side of the main inductance which consisted of both an antenna coil and the main tuning coil. Two variable capacitors were used. One for tuning and the other for fine control of regeneration. The two regeneration coils were mounted on pivots and could be adjusted with respect to the main inductance for coarse regeneration control. These set was mechanically complex and thus difficult for the average radio enthusiast to duplicate.

In March 1922 QST {2} an improved version of the Reinartz Tuner was described. It was very similar to the first one but

mechanically much more simple to construct. Many of these tuners were built by early amateurs and some survive to this day. They are easily recognized by the characteristic front panel layout of tap switches and variable capacitors and the spider web wound coil. The tuner appeared to consist of one large coil with many taps; however it was actually three separate coils all wound on one form. A single regeneration coil, the antenna coil and the tuning coil were wound sequentially on a flat cardboard form. Control

was achieved by a series of taps on all three coils as well as a variable tuning capacitor and a second variable capacitor for regeneration control. The tuner covered a range of 130 to 370 meters. This was strictly a tuner. The integrated radio receiver had not yet become the norm. A detector and perhaps an audio amplifier were added as desired.

In October of 1922{3} an additional article appeared in QST, written by John Reinartz himself, describing further modifications to the Reinartz Tuner with the objective of increasing sensitivity and selectivity by further reducing, losses associated with the earlier design. A brief description of the construction of a variometer to replace the main tuning coil was presented. It was wound with No. 18 gauge wire rather than No. 26 gauge wire used for coil construction in the previous designs. This modification also eliminated the tuning capacitor and its losses. It relied on distributed capacity and the inductance of the variometer to provide the tuned circuit. It was claimed that losses were sufficiently reduced that regeneration could be accomplished using only a variable capacitor without need for a regeneration coil. An additional modification of the old spider web wound coil was also described in which No. 18 gauge wire was substituted for the No. 26 gauge wire. As with the variometer version, with this modification the regeneration coil could also be eliminated due to reduced electrical losses. With either of these modifications the tuning range remained essentially unchanged. Coil taps were still used on the antenna coil and the main tuning coil but reduction of loss associated with the inductor increased signal

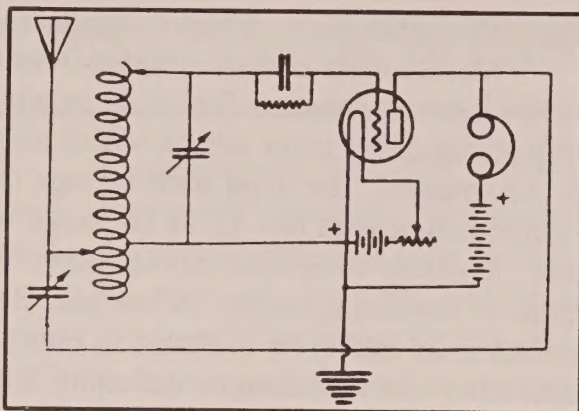


Figure 1

The schematic diagram for the Reinartz Tuner and the associated detector circuit is shown above. The tuning capacitor is a 13 plate unit of about 250 mmfd with the rotary plates connected to ground. The regeneration capacitor is a 23 plate unit of about 500 mmfd with the rotary plates connected to the antenna. The capacitors are so connected to minimize hand capacity effects. The grid condenser consists of a .00025 mmfd mica capacitor. The grid resistor can be anything from a few megohms on up. If it is eliminated the tuner will work but may take a few seconds to recover each time a local transmitter is keyed. The positive side of the filament battery should be connected to ground.

voltage at the grid of the detector significantly.

Mr. Reinartz had an additional article published in the November 1924 issue of *Amateur Radio*{4} in which he described further modifications of his tuner design which allowed it to cover the range of 10 to 200 meters. The tuner used no taps on the coils and basket weave coil construction with No. 18 or 16 gauge wire, which reduced losses further. Separate coils were connected to the tuner to cover various portions of the tuning range. A low loss Reinartz Tuner was also described in an article by S. Kruse in February 1924 *QST*{5} along with several other low loss designs including the enormously popular 1BGF Tuner.

The author has built the Reinartz Tuner described in March 1922 *QST*. A separate detector for use with the tuner was also constructed. This combination was used in the Antique Wireless Association Old Time Transmitter Contest of 1988 with modest success. Its performance was found to be quite good when used for broadcast reception, however it lacked sensitivity and selectivity when used on the 160 meter amateur band when compared to a 1 BGF Tuner or a Grebe CR 18.

In 1992 while contemplating equipment for use in the upcoming Old Time Transmitter Contest, the author decided to revisit the Reinartz Tuner and explore some of the modifications to the tuner as described in October 1922 *QST* in hope of improving its performance. The author dutifully built the variometer described by Mr. Reinartz. The description of the variometer construction was minimal. The result was a receiver which tuned the lower portion of the 80 meter amateur band rather than 150 to 350 meters as noted in the article. A brief review of variometer theory suggested that the culprit might be insufficient coupling between the stationary and moveable coils although a mechanical solution to this problem was not evident. It is also possible that there was an error in the article. The set performed quite well on the 80 meter CW band; however, desiring an authentic 1922 receiver for the contest the author trudged on undaunted. The second suggestion of Mr. Reinartz was to replace the No. 26 gauge wire used for the inductor with No. 18 gauge wire. This modification also eliminated the

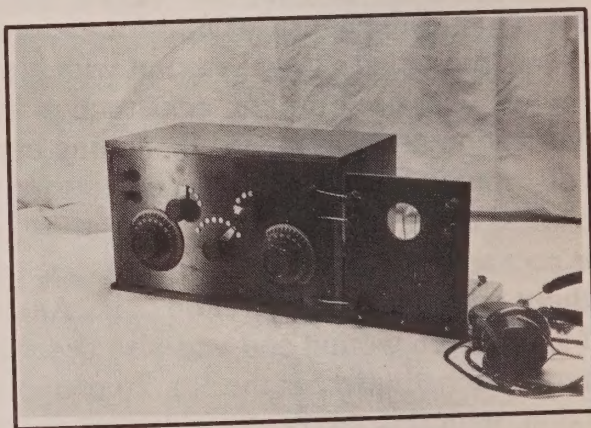


Figure 2

To the left is the Reinartz Tuner, to the right is the detector and Baldwin headphones. The filament rheostat control is on the right hand side of the detector front panel.

HUDSON VALLEY ANTIQUE RADIO & PHONO- GRAPH SOCIETY ELECTS 1993-94 OFFICERS

CAMPBELL HALL, NY -

The Hudson Valley Antique Radio & Phonograph Society (HARPS) held its annual election on May 21, 1993.

Officers elected to serve for the 1993-94 year were: Art Kingsley, President; Joe Botta, Vice President; Gary Berg, Secretary; and Linda Gramm, Treasurer.

Formed in May, 1991, HARPS was formed to serve the needs of local antique radio and

phonograph collectors who wanted to share information, equipment and related items, and their hobby with others who have the same interests. Monthly meetings feature educational demonstrations and mini swap meets. For more information about HARPS and for membership information, write Hudson Valley Antique Radio & Phonograph Society (HARPS), PO Box 207, Campbell Hall, NY 10916 or call John or Linda Gramm at (914) 427-2602.

New Restoration Service For Not So New Items

CAMPBELL HALL, NY - Gramm-O-Phone Antiques announces that as of June 1, 1993, an antiques restoration service is now available to existing customers and the public. Gramm-O-Phone Antiques will restore antique radios, phonographs, lighting fixtures and small furniture.

The restoration service began as a service just to customers who wanted to purchase items in usable condition. "Because of the high demand, we've decided that we will offer the service to the public as well. Very often, we receive calls from people who tell us they would love to hear Grandpa's old radio play again. Well, now they can," say John and Linda Gramm, proprietors.

"We have found that nearly every item brought to us can indeed be restored. It's exciting to watch someone's face light up when they're presented with what they thought was a 'basket case', and is now ready to be put to use in their living room." In almost all cases, according to the Gramms, original parts are used in the restoration. If at all possible, original finishes are kept on the antiques, restoring their charm rather than stripping the item so that it looks brand new.

Gramm-O-Phone Antiques' Restoration Service offers free estimates. For more information, please call John or Linda Gramm at (914) 427-2602 Monday through Saturday, 9 am to 7 pm.

ARCA 1993 Old Equipment Contest

Huntington, West Virginia

CLASS 1 Crystal or Coherer Receivers

A. Factory Made

First Place	Larry Babcock
Second Place	Ross Smith
Third Place	Joe Koester
Special	Larry Anderson

BTH Crystal Set
L. M. Ericsonn Set
Martian Big 4
Brush Bug Crystal Set

B. Homemade or Kit Built

First Place	Tom Burgess
Second Place	Ross Smith
Third Place	Zane Parsons

Dual Crystal Set
Bunnell Base Set
Cigar Box Set

CLASS 2 Regenerative Receivers

First Place	Robert Lozier
Second Place	Ernie Hite
Third Place	Ed Bell

Volksempfaenger Radios
Premier Electric
Crosley Pup w/box, Bonzo

CLASS 3 Superheterodyne Receivers

A. Battery Sets

First Place	Ross Smith
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Radiola 26

B. AC Sets

First Place	Ed Clay
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Zenith Model 6R886

CLASS 4 Receivers using RF Amplifiers

First Place	Ron Frisbie
Second Place	Clay Seidel
Third Place	Dick Desjarlais

Walter Boy Scout Radio
Stewart Warner MDL R18
SCR 59 WWI Radio

CLASS 5 Art Deco Radios

First Place	Joe Koester
Second Place	Kris Gimmy
Third Place	John Deloria
Special	Tom Burgess

Zenith Chrome Front
Sparton Blue Mirror
PLA-PAL Radio
Emerson BD197 (Mae West)

CLASS 6 Speakers

A. Original Models

First Place	Ross Smith
Second Place	Tom Burgess
Third Place	Larry Babcock

Murdock Model 500
Superior Grand Horn
Wurlitzer Horn

B. Exotic Models

First Place	Jim Rankin	Stewart Warner Dancing
Second Place	Ed Bell	Confucius Horn Speaker
Third Place	John Deloria	Splitdorf-Abbey

CLASS 7 Radio Advertising

First Place	Joe Koester	Stewart Warner Sign
Second Place	Barry McDaniel	Crosley Display
Third Place	Jack Woodrum	Zenith Sign
Special	Ted Babcock	Babcock Radio Store Ads

CLASS 8 West Virginia Radio Manufactures

First Place	George Freeman	Justrite Air-Ola
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CLASS 10 Home Built Sets

First Place	Pony Maples	Spark Transmitter
Second Place	John Haught	Radios News 2 Tube Set

CLASS 11 Television

First Place	Herbert Waterman	1936 15" Scanning Disk Television
Second Place	Mike Bowe	Setchell Carlson MDL C106

CLASS 12 Transistor Radio Pre 1965

First Place	John Deloria	Toshiba Radio Display
Second Place	Kris Gimmy	Early JVC Radios
Third Place	Jack Woodrum	Bulova & Pet Radios

CLASS 13 Novelty Transistor Sets

First Place	Sara M. Haught	Elvis Radio
Second Place	Rita Bancroft	Little Lulu Radio
Third Place	Wave Smith	Oreo Cookie Radio

SPECIAL AWARD **TOM BURGESS** 1890 DYNAMO **NEWLY BUILT**

PEOPLES CHOICE AWARD©

Bill Fitch
Microphone Display

BEST OF SHOW

George Freeman
Justrite Air-Ola

PRESIDENT'S MUSEUM AWARD©

Ralph Muchow
Burndept Ethophone Grand

JUDGES

Gordon Symonds
Floyd Bennett
Ralph Williams
Geoffrey Bourne

JUst-riTE

By George A. Freeman

AIR-OLA RADIO CO. of Huntington, WV began about 1923 in an 18 by 20 foot buggy garage in a barn owned by Abraham Lincoln Shockey. Shockey was a prominent building contractor when Huntington was a boom town. The barn was on the Shockey estate in Park Hills. Folks called the hilltop "Shockey's Knob". The Shockeys' only child, Blanche, had married Charles V. "Chevie" Chevront in 1919. Chevie was a WWI vet.

With another vet, F.W. Root, he hatched a plan to go into radio manufacturing. Root had some radio experience in the Army. Chevie owned a real estate agency. Capital for the venture came from Blanche Chevront's parents.

A trade mark, JUst-riTE was registered in the U.S. Patent office. JUst-riTE employed the Acme Reflex circuit with three stages of radio frequency amplification, fixed crystal detector and three stage of audio amplification. Face panel and chassis base were, at first, both made of hard rubber. JUst-riTE boasted one dial tuning. Two different models were advertised in May, 1925. By now manufacturing had moved out of the barn and to downtown Huntington at 615 Sixteenth Street. The Portable was said to be small enough to be carried under one's arm. This is the radio that is pictured. It sold for

\$133.50 and included a folding loop antenna. Another console version sold for \$250.00, tubes and batteries not included. The Console cabinet housed a loudspeaker. It was available in two finishes, "Adam Brown Mahogany with selected diamond cut mahogany veneer, or Dark American Walnut with selected burl walnut veneer".

Chevie was quoted in the Huntington Herald-Dispatch. He announced in March, 1925 that AIR-OLA was manufacturing a portable radio receiving set that would audibly receive "the air's music" in an automobile!

Other 1925 JUst-riTE models listed in

a hobby magazine (1) included JRL-3, a \$165 console using four tubes, a storage battery for filament supply, and a Reflex circuit receiver. Reflex TRF-5 was a \$120 console model offering one dial tuning, using five tubes, storage battery for filament supply. Another model described is a Tuned Radio Frequency receiver, and still another model, the JUst-riTE Reflex with one dial tuning and an untuned radio frequency amplifier.

Mr. B.T. Chevront has done a great job of retaining documentation of his father's business. B.T. believes the total number of AIR-OLA's manufactured totaled in the hundreds.

Radio technology was progressing rapidly. Chevie



Just-Rite Radio, Mfg. Huntington, W. Va. "Best of Show"



Geoff Bourne presents the "Best of Show" to George Freeman

summoned a New York engineer, Frank Kerjesky (kie?), in an attempt to keep pace. In less than a year it was decided that AIR-OLA manufacturing could not compete in the marketplace. AIR-OLA's last radio was made in 1926.

21 years later Shockey's Knob would flirt once again with the radio business. W.J. Newton, owner of Huntington Broadcasting Corp. bought Shockey's Knob in April, 1947. He built WPLH-FM. The manager was Flem Evans, former GM of WSAZ-AM back in 1942 (3). An FM station without a companion AM providing income was a suicide mission in 1947. There were virtually no sets built to receive the new FM band. WPLH suspended operations (2).

Back to Chevie and 1926. Chevie gave up making radios but not the radio business. He had already been a wholesaler while manufacturing. He distributed to three Huntington and one Cattlettsburg, KY radio dealer. AIR-OLA hitched its wagon to the FADA Radio star for the 1927 and 1928 model years.

AIR-OLA moved to the O.L. Standard Building at 625 Tenth Street to acquire warehousing space for the FADA line. But changing technologies continued to threaten both FADA and AIR-OLA. Battery powered radios were now obsolete. AC was in.

FADA could not adapt and collapsed in November, 1927. (4).

Grigsby-Grunow's star was rising as fast as Frank Angelo D'-Andrea's (FADA's) was plummeting. AIR-OLA signed as a Majestic jobber, and AIR-OLA jumped in with both feet. Chevie incorporated to attract investment capital. One who came forth was an Ashland, KY banker with lumbering and gas interests, a Mr. Kitchen. AIR-OLA spent five thousand dollars to take its dealers to a Majestic convention in Chicago during May, 1929. 300 jobbers presented a \$23,000 rolls Royce to Majestic president, Bill Grunow.

Then came the stock market crash. All those gorgeous, impressive Majestic consoles became anathema. Bill Grunow was fired in January, 1931. That same year another coup back in Huntington dethroned Chevie Chevront. Two years later Grigsby-Grunow was in receivership. (5) It was November, 1933.

B.T. "Bob" Chevront recalls seeing an Icy-Ball Refrigerator being tested in his daddy's AIR-OLA office. This was a Crosley product. William G. Evans, a minority stockholder of AIR-OLA and personal friend of C.V. Chevront's, later became head of the Crosley Radio Division of Huntington Wholesale Furniture Company, Inc. This firm occupies the same buildings on Eight Avenue that contained AIR-OLA jobbers. Huntington Wholesale has been operated for 75 years by the Frank E. Hanshaw family.

Corrections, additions, and more information are most welcome. Please contact George A. Freeman; WIKI Building. 102 E. Main Street, Madison, IN Phone (812) 265-6878.

(1) "Radio Collector's Guide" (Revised Edition. Morgam E. McHahon. Pg. 19.

Mel's Corner[©]

Ever stop to think---What prompted Thomas A. Edison to get going on the road to inventions---patents!!

His early days found him riding the rails in a baggage car----with his many-many thoughts in mind!! What differed him from Joe Blow--was his keen Imagination!! The spirit to give it a try---

Ridiculous as it may sound at first--his ability to pry those inspired thoughts---with "What's available" led him far afield--in many directions----By chance-or imagination--things began to click! Most know Edison by the invention of the light-bulb----But it's the radio folks that are aware of what is known of the shadow appearing on the inner glass of a tube known as the "Edison Effect". Knowledge helpful to Dr. Lee De Forest---- Recall Edison saying - "Nothing Ventured---nothing gained!"

That thing on the top of your shoulders with ears & eyes must furnish the answer!! The computer therein records and stores memories of everything in our lives! While in a placid mood one stirs the imagination as well. How little time these days---we take to let it run it's imaginative course!!!!

Mr. Edison was a light sleeper in his day-----Was it his imagination----that led him to fame!!

I guess what inspired me this article--was the fact that I knew Thomas A. Edison - as a boy in my younger days on visits with my Grandfather at West Orange, N.J. The two were great friends in their discussions of mutual patent's relating to early phonographs--which they both held.

In 1926 radio was in it's boom days!! I was having trouble with storage batteries--always needing charging with one amp tubes-- UV-200 & UV-201 the culprits! Passing out-or low-always the wrong time! My Granddad mentioned this to Mr. Edison--where I saw him scratch a note on a pad--- A week later here comes an Edison electric truck up my driveway with a wooden crate of the Edison Primary batteries, with a note attached - "Try these-and let me know how they hold up!" It was over two years later - they were still perking!

The catalogue I got with the batteries showed their main use was with the railroads--remote signal lights-- Great now in radios-

Back in 1926 this boy had a service job with an Atwater Kent distributor in East Orange, N.J. It was there I received a call from Mrs. Edison three days before Christmas 1926---wanting an Atwater Kent radio installed in their home library.

We had recently received our first shipment of AK model 35's--which were going out like hotcakes!! A great receiver of those times! We called them the "Metal bath-tubs!" But work!! --They did! NO problems-WJZ located at Newark, N.J. now had regular schedules inspiring the country side-----so this was it!! But how could Mr. Edison hear this with his impaired hearing loss where he used a trumpet in usual conversations. The answer turned out to be a set of Baldwin phones plugged into the output of the 35 model---which he thoroughly enjoyed!!!

The Thomas A. Edison laboratory and nearby home are a National Museum I wonder at times---Is that model 35 still sitting on the library table?

Forgive me digging out old memories, but sitting here listening to my trusty old model 35, these thoughts remain in my Antique noggin!!!

Cheerio!!

Mel Comer

Two Special Radiola Specials

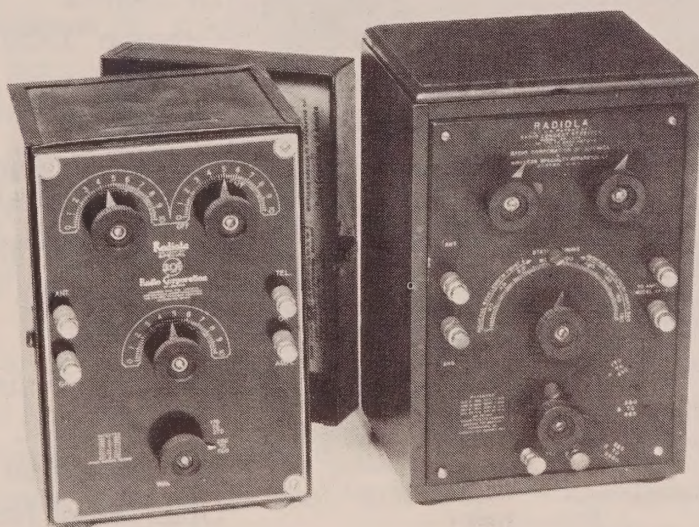
Alan Douglas

Here's a mystery: two Radiola Specials. The left one is normal in all respects. The right one has only lost its metal panel, and gained a couple of binding posts at the bottom (which aren't connected internally anyway and may just be filling the holes).

But it's in a wooden cabinet, and evidently has been, since it was made. This cabinet style housed several Wireless Specialty models, seen occasionally in pictures but never made in quantity, nor sold by RCA. The AR1375 Radio Concert Receiver crystal set, appearing in *Radio Enters The Home* and later converted into the Special, always had a metal cabinet. So what was this one doing in a wooden one, either before or after the conversion?

At a guess, this was a leftover sample cabinet, superseded in the production version by the more rugged and modern-looking metal.

It was converted to a Radiola Special cabinet like all the others: three holes drilled in the back for battery wires and a battery-voltage plate attached (and of course the usual changes to the chassis). But why do the binding posts appear to be gold-plated? And how did this example get to England?



Member Letter:

Really enjoy your column in the Gazette. They are always the first article I read (after the ads of course!), and I've read every single one! Bravo Mel's Corner!!!

Frank R. White
KB0TG
P.O. Box 3283
Olathe KS 66063

Meeting Report:

1993 Antique Wireless Association
Southeastern Regional Meet

by John W. Haught

The AWA Southeast meet held at Monroe, North Carolina, March 26-27, 1993, was a tremendous success with over 165 registering and approximately 50 vendors in the Flea Market area.

Sara and I attended this friendly event last year, enjoyed ourselves so much, that we returned this year and were not disappointed with the two-day Program of Events.

This Meet is held annually at the Union County Farmers Market, in Monroe, which is an ideal location with available facilities to support the Flea Market (covered area) and meeting room which seats 85, with room for the contest judging and viewing. Although it rained both days, the Flea Market activities were not curtailed because the area is under roof, with available tables on a concrete floor.

There were many choice items in the Flea Market area. We

noticed Federals - 110, 61 and a 59. Also observed were early Amateur equipment, instruments, tubes, signs, and novelties.

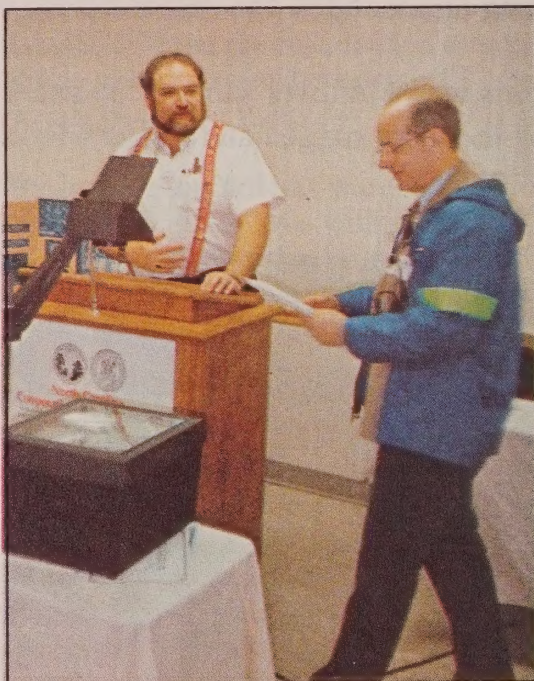
The contest was a great success with approximately 45 entries, all of National Conference quality.

The Contest "Wrap-Up" was by Robert Lozier, a presentation by Dr. Dennis Osborne "1920's Kit Sets", and John Allen presenting "Radio Circuits and How they Work", all well received.

On Saturday evening, Robert Lozier, KD4HSH, held an Open House for

the attendees and is a "must see" as is the Ron Lawrence, KC4YOY, collection which was on view last year.

In summary, a big thanks to the dedicated men and women who share in making this annual event a great success, and who extend a welcome and friendly hand to all who attend; a "must attend" for 1994. 



Ron Lawrence, KC4YPY (at the Lectern)
Robert Lozier, KD4HSH (Holding Paper)
Photo - J. Haught

My Day with Harry Houck

by Larry Babcock

Hello! Hello! What? You say you are Harry Houck, you just flew into town and you need a ride to our antique radio meet? WOW! Did that ever happen to you? It happened to some of the members of our club in Buffalo, the Niagara Frontier Wireless Association.

Did you ever chauffeur Harry Houck to an antique radio meet? Neither did I but my wife, Dot did. Of course she had never heard of Harry Houck before that summer in 1979 but could see the excitement in our club member's actions and became equally excited.

At the ARCA 93 meet in Huntington, WV, Lloyd McIntyre asked winners in the equipment contest to send in some interesting information about their entries. This is my story.

At the summer 1979 NFWA meet in Buffalo, NY the subject of the talk was "Armstrong" to be given by Jim's wife, Felix Kreuzer. Somehow Harry heard about this and decided to fly in, I believe from Florida, and attend the meet! He came practically unannounced and for us it all started out just about the same as the introduction to this article! Dot picked up Harry and his gentleman assistant in

my Dad's old restored red Cadillac.

Can you imagine how Felix must have felt to give a talk about the life of Armstrong with his top assistant, Harry Houck, in the audience? Harry seemed to enjoy the talk and agreed with most of what was said. He even responded to some questions and added to the presentation. He said that he, Harry, invented the concept of using the second

harmonic of the local oscillator rather than the fundamental to beat with the incoming R. F. signal to tune the Radiola Second Harmonic receiver. That set was his baby. He

designed and developed it. As I recall, he said the second harmonic of the local oscillator was of lower amplitude than the fundamental. Therefore it didn't overpower the incoming signal so much and improved performance. Also the same change in tuning capacity gave a large range in tuning frequency.

There were only about 30 or 40 people in the audience so everyone was able to meet and talk with Harry personally. Even then he looked old and feeble but his mind was still sharp. He was looking for a museum to display Armstrong's early



Larry Babcock receives the "Harry Houck" award on behalf of the Niagara Frontier Wireless Association.

The Ladies of ARCA Unite!

I am the "silent" side of an ARCA team, as many other ladies are. We listen to stories about incredible finds, we go from flea market to antique stores - which we dearly love to do. We get excited when the **GAZETTE** comes to our homes four times a year, and we can't wait for the yearly ARCA convention.

It is grand to plan a trip to a different location every year and the excitement of not knowing which new hotel you will be sitting in for 3 days is beyond belief! I say "sitting" because that is what most ladies end up doing, due to the fact that the "active" side of the ARCA team usually has the family vehicle tied up in the parking lot at the Trader's Market.

Of course, we can stay busy sitting at the registration desk for 4 hours while the "active" side attends seminars or sells his wares. The "active" side is so busy with important things, you wouldn't dare ask to pull him away.

If the above thoughts sound depressing, well this is to let you know that things have changed! ARCA's "silent" side didn't hang around the hotel this year! With beautiful weather and an old beat-up van, we headed out early and covered a lot of territory!

On Thursday a.m. we visited Berryhill - a boutique house, and craft center. The good people at Berryhill provided us with refreshments,

carnations, and also demonstrations for candy dipping and ribbon roses. We had a grand time trying to figure out which key went in the ignition and was saved by President McIntyre. He had to leave the convention to tell me that I had two sets of van keys in my purse, which was hanging on my arm! Of course, that only slowed us down for a mere half hour and then on to the **Huntington Galleries**. Lunch was very good at the **Heritage Village**. This is a renovated railroad station with boutiques in the outbuildings.

The 3:00 p.m. **Ladies Collector Corner** was well attended, with several ladies bringing their own special treasures to display. Some of the "active" side tried to sneak in, but were quickly ousted. However, the "active" side were allowed entry after our get-together was finished. The "active" side don't want to miss a thing!

Thursday a.m. brought the "silent" side together again for a trip to **Blenko Glass Plant**, where we thoroughly enjoyed watching the glass blowers, and also took advantage of the outlet shop. Our van rattled a lot and we weren't quite sure if it would make it, but we arrived at **Pilgrim Glass Plant** with no problems at all. The display and outlet shop was very nice, and quite an number of the ladies purchased special gifts of glassware here.

On the interstate we go again - looking forward to lunch - then

disaster strikes! On a bridge situated about 40 miles up in the air under construction - half way across our back right tire runs out of air. We finally get across bridge, with no small amount of excitement, and pull off on berm. The ladies present a white handkerchief and it is tied to the antenna. No passing person in their right mind would dare stop to assist 14 women in an old white van with a flat tire! They might sympathize and shake their heads, but it ended there!

Well, the only thing left to do would be a short little hike down the mountain for 40 miles or sit there waiting for the police. Of course, they only show up when you are speeding! The hill was freshly under Construction with only a few inches of soft mud and straw - easy to walk on if you are Kathy Koester in peach slacks and flat shoes. Of course, I was farsighted enough to realize this would probably happen and elected to wear shorts and tennis shoes. I always try to plan ahead. Anyway, to make a long story a little shorter, we did come upon some grass at the bottom of the hill, which worked out really well when Kathy slid down on her "peach" slacks. By this time we were having such a good time that I couldn't help but snicker at Kathy, just before the pick up truck came down the mud-covered road and ran through the water hole. I looked up just in time to see the man laugh as he covered me and Kathy with whatever was in that hole. This, of course, all happened just before the dog ran out and started to bark at us and just before we went to a house with 3

front doors and no one would answer our pounds on their doors. However, the guys at the Highway construction trailer were really nice to let us use their telephone.

Ugly Duckling Rental (How did they get that name?) only argued a very short time after I described the situation and what I was going to do to her if she didn't quit denying responsibility and send help.

After a healthy climb back up the 40 mile hill, Kathy and I found all of our ladies talking and having a grand time. The tow truck came, the man changed our tire in "nothing flat" and we were on our way.

You ladies, the "silent" side, are something. You climbed in and out of the van for two days, you were treated to the air conditioning going out twice and had to endure the wind in your face (at least the windows opened!), you were patient during the flat tire and never complained at all. I only hope that the "active" side can appreciate what they have! Everyone seemed to have a really good time. You piled in that old white van, laughed, and told stories. You shared you life with others and made new and lasting friends. I bet in these 2 days you will have enough stories to keep your "active" side entertained for a long time to come.

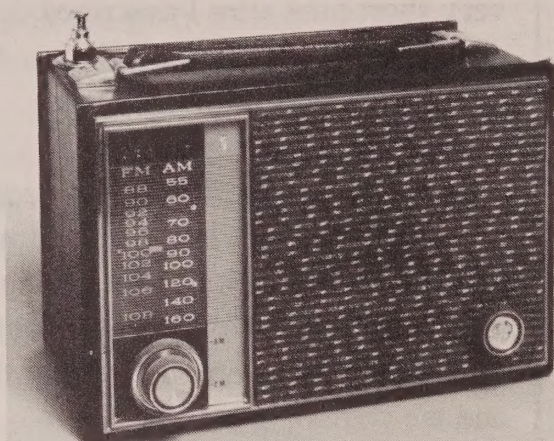
Now when the **GAZETTE** comes in maybe you will be excited about the ARCA gathering and about the adventures you will have with your new friends. Ladies, it is hard to tell what we will get into in Little Rock! 

Patsy McIntyre

Transistor Topics[®]

The Zenith Model 880 Transistor Radio

by Serge L. Krauss

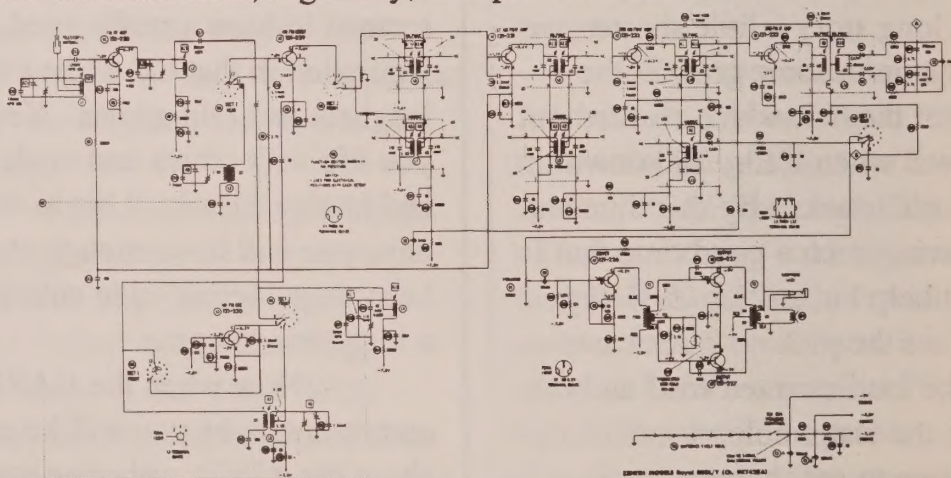


The title radio is a somewhat bulky AM/FM portable with a stitched black leather like material covered fibre case about 10 x 6 1/2 x 4 3/4 inches and weighs over 5 lb. The set shown appeared of early design and a peek in the back revealed a hand wired chassis #9KT42Z6 with nine transistors in sockets.

However, a check of the component code dates makes it an enigma. A hand wired transistor socket set made in 1962, long after circuit board construction took over. Maybe it is a by-product of Zenith's die-hard hand wired TV sets.

The circuit is straight forward with an FM RF stage, separate AM/FM oscillator, three FM IF stages, and a push-pull audio stage. It operates on 9 volts from 6 battery cells with a modest normal current drain of 38 mA.

The set shown was quite dirty as found and restored by Ross Smith's excellent skill, ingenuity, and perserverence.



Photograph Courtesy of CTS-Turner Museum, by Joe Carlson

Circuit Courtesy of George Kacqowka, of Boylston, MA

We welcome Serge Krauss as our guest editor and invite others to send in articles for Transistor topics. R.S.

The First Twenty Years

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“ARCA GAZETTE”

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through Vol. 20. References to articles are listed in the form of volume-number-page. As an example, to locate information on the Victoreen superhet, a check under “Receivers - Broadcast - Tube” shows “14-3-21.” “Gazette” Vol. 14, No. 3, Page 21 has this article. For computer use, a search for “Victoreen” will quickly locate this reference.

In the listings, an item of a full page or more is shown with an asterisk. Two asterisks indicate an article of three or more pages.

An item cited in this index may vary in size from a passing mention to a major feature. Because even scraps of information may be useful, the citations go to fairly fine detail.

Thanks go to Lauren Peckham for sizable help in researching the earlier issues.

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CHAPTER INFORMATION

*Ask about a chapter in your area.
Contacts

***Antique Radio Club of America
West Virginia Chapter***
408 8th Avenue
St. Albans, WV 25177
*Geoff Boume
(304) 722-4690

***Hudson Valley Antique Radio
& Phonography Society-ARCA***
Rt. 207, P. O. Box 1
Campbell Hall, NY 10916
*Linda or John Gramm
(914) 427-2602

Hawaii Chapter ARCA
95-2044 Waikalani Place C-401
Mililani, Hawaii 96789
*Leonard Chung

Kentucky Chapter-ARCA
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Louisville, KY 40216
*Robert Dickerson
(502) 447-6399

Arkansas Chapter-ARCA
Arkansas Antique Radio Club
10524 Pat Lane
Mabelvale, AR 72103
(501) 565-1750

MAARC Monograph Review

"1928 - Birth of Philco Radio"

By Michael Prosise

Reviewed by Bill Denk, W3IGU

Supplier: MAARC Technical Library Services, 3658 Daisy Road,
Woodbine, MD 21797-7526. \$5.00 Postpaid, payable to MAARC

We are indebted to MAARC and to ARCA member Michael Prosise for this 8½ by 11 inch, 22-page monograph relating the story of the birth of Philco radio and its first year's production - the 1928 line of Philco radios. Perhaps because Philco was something of a late-comer in the manufacture of radios, relatively little has been written of its early history which, so far as its radios are concerned, began as the era of crystal sets and battery-powered radios had essentially closed. To firms such as Atwater Kent and RCA, Philco must have seemed an upstart indeed. Yet, as Michael points out, in only two years Philco would take the Number One position in the industry, selling twice as many radios as its nearest competitor!

Michael traces the origins of Philco from its beginnings in 1892 as The Spencer Company, quickly renamed Helios Electric company, a manufacturer of carbon arc street lights. Then, in 1906, as it shifted to the manufacture of storage batteries, Helios became, by change of name, The Philadelphia Storage Battery Company, from which was derived the Trademark PHILCO.

Included in the well-illustrated monograph are reproductions of Philco's pre-1928 advertisements of such of its products as storage - type A and B batteries, trickle chargers, and socket powers.

Philco's rapid response to RCA's unanticipated announcement, in September 1927, of an AC-powered receiver using RCA's newly developed alternating current tubes, types 226 and 227, is interestingly told by the author. It was immediately clear to an alarmed Philco management that sales of its radio batteries and socket powers would be severely impacted. The author's account describing the actions taken by Philco, and its development of the Model 511 series of AC-powered Neutrodyne receivers is informative, and accurate. Philco's success in launching its 1928-line of radios in mid-1928 must be regarded as almost miraculous, when one considers that Philco planning had to follow the September 1927 announcement of RCA's first real AC-powered set. That was a date on which Philco had as yet no laboratory devoted to the development of radio receivers.

Illustrating this account is a schematic of the Model 511, and pictures of Philco's 1928 line of receivers, consoles and loudspeakers.

The monograph provides a 27-item Bibliography, including the article from FORTUNE magazine, Vol. XI, No. 2 (1935), "1,250,000 Out of 4,200,000 U.S. Radios".

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regeneration coil. Success was immediate. The sensitivity and

selectivity were dramatically improved with both CW and SSB signals jumping out of the ether with just a detector and a set of Baldwin phones.

While the author encourages the reader to refer to the original articles, a brief description of the Reinartz Tuner of October 1922 follows which will allow construction of this fine early tuner and an opportunity to gain an appreciation of the performance of state-of-the-art 1922 technology (Figure 1). Figure 2 is instructive as to the front panel layout for the tuner. The panel is a 11" x 6 1/2" piece of black paper phenolic (6). The four position tap switch for control of regeneration found on the upper left is not needed and is a remnant of the authors earlier experiments. The same holds true for one of the taps on the right hand tap switch. In the upper left hand corner are the antenna and ground connections. On the right hand side of the panel from top to bottom are the plate, grid and ground connections for the detector.

The spider-web coil form is made from illustration board which can be purchased at any art supply store. First cut a disc six inches in diameter using safety razor. From this the spider web form is cut with a 2 1/2" center and nine spokes. Each spoke covers 20 degrees of rotation. Ideally the form should be soaked in hot paraffin before winding the coil to exclude moisture. The coil which consists of the antenna coil and main tuning coil is wound with No. 18 copper wire. Cotton or silk covered wire of that gauge is difficult to obtain so the author substituted enamel insulated wire. From the inner diameter, the coil is tapped at the second, fourth, sixth, seventh, eighth and ninth turns, and the tenth turn for the ground. Continuing the winding, taps for tuning are taken at the twenty sixth, and thirty-third turns with the fourth turn being the end of the coil. The taps are made by scraping a small amount of the insulation from the wire as winding proceeds and soldering a piece of No. 26 gauge copper wire in place. Components for the two tap switches can be obtained at local antique radio swap meets or can be made from brass machine screws and nuts from a local hardware store.

The coil should be mounted perpendicular to the front panel and held to the base of the wooden cabinet with a wood screw. This mounting minimizes hand capacity effects. Although Mr. Reinartz stated that hand capacity effects were negligible, the author found this not to be the case for modern use. Broadcast reception was not a problem but on the 160 meter band it was annoying. The solution was a thin piece of aluminum mounted on the back of the front panel and grounded (Figure 3).

The detector is a conventional circuit using a UV201 tube. This was chosen to be historically correct since the thoriated tungsten filament version, the UV201A was not even announced until 1935

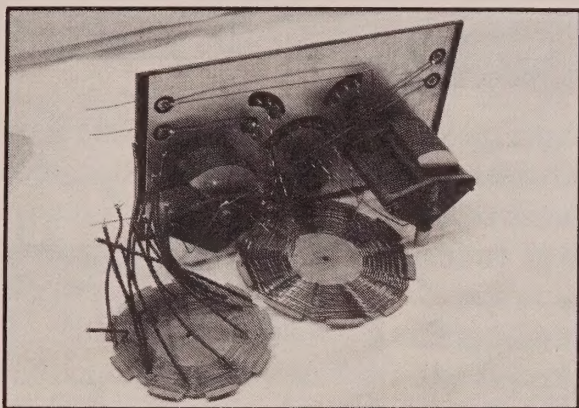


Figure 3

The fully wired tuner is shown. The early version of the spider web coil wound with number 26 wire is shown on the left. The larger coil wired into the tuner is wound with number 18 wire. The regeneration control capacitor is seen on the right, below the antenna and ground binding posts.

December of 1922. A number of these tubes were tried and the best performer selected. The white hot glow of the tungsten filament adds an extra degree of authenticity to the operation of the set. A small six volt lead acid battery for motorcycle application was used to supply the one ampere required for the filament. Do not attempt to build a power supply for this application as it is virtually impossible to eliminate the hum. An Air

Champ B battery eliminator was used to supply 22 1/2 volts for the plate supply.

In operation, the set can easily be made to oscillate using the regeneration control if only a couple of turns are used from the antenna coil. If five or ten turns are used for the antenna coil, the set will tune quite broadly which is acceptable for listening to concerts but unacceptable for 160 meter amateur work. Depending on the antenna used and the number of turns used from the antenna coil, it is possible to load the set down sufficiently to stop oscillation. The filament control will also affect the ability of the set to oscillate which is of course necessary for CW work. Since the set will oscillate over a fairly wide range of regeneration control settings and the regeneration control has a slight effect on tuning, the regeneration control can be used as a tuning vernier. ➤

Acknowledgments: The author wishes to thank Matthew Hurni for excellent photographic assistance.

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Chairside Love Affair

by John W. Haught

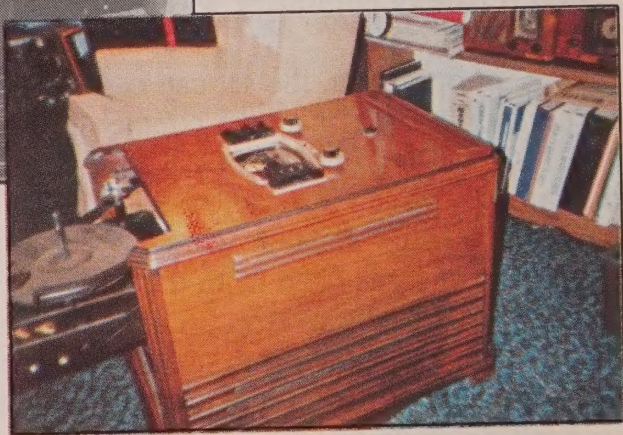
Just so you, the reader, and my wife Sara don't get the wrong idea, the love affair you are about to read about is not a "modern affair", but one that goes back fifty three years, and her measurements are, 28-20-21; she



Oh yes, I almost forgot, with the slight push of a top button, the record changer will smoothly move out and up, ready to play your favorite record. Talk about modern engineering, this mechanism performed

faultlessly, once properly adjusted (after scratched and bloody hands and many uttered words of "legal" profanity).

Restoration commenced with



talks and we listen to her beautiful music!

If you have not already guessed, I am referring to a most recent addition to our collection, a 1940 Zenith Model 7S681 Chairside radio.

The Chairside, as per picture, was in need of some TLC when the restoration began a few months past. Although we owned another Chairside, this is the one that seemed to belong by my old easy chair in the combination den-amateur station-radio display room. What I remember the most about this radio was that it also had a pop-up 78 rpm record changer, shortwave bands, and an added feature of a "let-down" record storage compartment at the opposite end of the cabinet. How could anyone not fall in love with such a versatile piece of furniture?

regluing the cabinet back together, and after many hours of gluing-clamping operation the cabinet was solid once again and could be moved without two or three people holding it together while moving it from one location to another. Next, the true test - can the cabinet be brought back to its original luster and beauty? Using my secret concoction of various ingredients, and many hours of "labor of love" physical activity on the cabinet, I made the decision to continue the restoration and begin the chassis work that was required to bring this beautiful radio back to life.

By the way, if you have

Continued On Page 45

Student Field Trip



Far Left: Mr. Alvin Brown Principal
Front Row 3rd & 4th Don Paitzel & Tom Walker
Instructors. All the rest are students of the
electronics classes, Ben Franklin Career &
Technical Education Center.

As part of a community involvement program, a student field trip was arranged to visit the Museum of Radio & Technology, Inc., which included about 30 students; Tom Walker and Don Paitzel, instructors of the Ben Franklin electronics class; Al Brown, the principal; and yours truly.

This is an invaluable trip that students use to look back upon the history of a technology, which today is still changing at such a rapid pace, one

cannot begin to keep up with it.

Following are two letters that were written by students expressing their feelings regarding this trip back in time. A part of our Museum creed is to remember and learn from the great minds who brought us this wonderful thing called "radio electronics".

Lloyd McIntyre
Editor

Mary B. Raines
Adult Preparatory Electronics
Ben Franklin Career Center
May 21, 1993

On May 19, the Adult Preparatory Electronics class visited the Museum of Radio and Technology in Huntington, WV. There were many fascinating things to be seen. Among the most interesting were the world's largest vacuum tube which was oddly shaped and did not resemble any vacuum tube I had ever seen, and a demonstration of a spark gap transmitter which utilizes about 8000 volts of raw A.C. Quite dangerous to say the least!

The museum has some of the earliest television receivers and many antique radios as well as the first transistor radios. There are radios of the "bread board" variety. These are ones where the individual components were sold to the consumer and put together on a large piece of wood. Many times the kitchen bread board, used to knead dough on, was used to construct the radio on. The is where the term "bread boarding" came from.

I think anyone with an interest in antique radio and television would enjoy touring this museum. It would bring back memories to the older folks and the younger generation should find it interesting to see how much of the modern technology we take for granted today, got its start. It's an interesting place to visit and more and more items are being donated all the time as well as other improvements being made. I would recommend visiting the museum to just about everyone.



Jerry Young
Adult Electronic's Class
Ben Franklin Career Center

Dear Lloyd and Associates,

I want to take the time to thank you and your group of dedicated people for inviting the Electronic Classes of Ben Franklin Vocational School to your wonderful Museum. I am writing this letter to express my feelings of how much I enjoyed this tour that we took on 05/19/93. One way of expressing it is by saying, It's like looking into a Bible of Electronic Technology. The "Beginning, Past, and Present Time" Break-throughs of Radio Technology from the early 1920's thru the 1970's.

The tour started off first in the auditorium, with a briefing of how the Museum got started and where it stands today in the eyes of the public. We then divided up into two groups and went separate ways. This made it possible to take more time looking and enjoying the excellent showings.

The first showing we came to after leaving the auditorium was called the Lynch Room. It was named after a local business man who owned such a store in the 1920's. It resembled an early Radio and Technology Sales and Repair Shop. The room contained all different types of radios, receivers, and equipment to work on them with. The store stocked accessories such as, Radio and TV replacement tubes, and different types and sizes of batteries. We noticed that there were even old earphones lying upon the shelves that were used for the first type radios and receivers. We also saw a flashlight the women would keep in their pocketbooks for their personal use. I want to mention one thing in particular that caught my eye while I was in this room, It was a Windmill. During the early years the Windmill was used to work a generator to produce current. Now this made me start to daydream about making one of my own, to use for such things as a 12 volt lighting system for my home. Yes, this was an interesting room. We also saw radios in which all the wires and components were visible to your sight, but, this was normal in the first radios designed. We were told that women decided that the wires and components needed to be hidden, and so someone decided to make it look like a piece of furniture. So radios were then placed into cabinets, and this changed the whole outlook of Radio Technology.

We also got to see a circuit board and some early TV's and their styles of cabinets. One type we saw had a swivel base, but technicians felt that they were too compacted together to work on, so production was stopped. There was also a large magnifying glass which was used to set in front of a small screen TV to amplify the viewing. There was even a TV with a clock built on the top of the cabinet, unlike the TV's of today with the time displayed on the screen. During the tour, we got to hear old radio programs and see old time speakers and phonographs. We

Continued From Page 40

visited the Library which contained books of early time Radio Technology to books of present day technology. Adjoining the library is a gift shop, with some souvenirs like jackets, hats and such. Something in the shop I liked was cassette tapes of old time Comedians, not like comedians of today, with uncontrolled language. After seeing the showings we then returned to the auditorium for a group picture. This was the conclusion of the tour.

I would like to add a comment to this letter, before closing. I believe this is not only an exciting and interesting place for beginning Electronic Students, but it would have the same effects on someone who had several years in Electronics. I also believe it would interest anyone who likes Antiques, or would just like to take a look at American History. Even the building itself is of considerable age, but this just amplifies the Antique showings.

Now, in closing this letter, I would like to say. I "Would, and Will," encourage everyone to take a visit to the "CURRENT" Museum Of Radio And Technology. 

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Headphone Tips

by Richard Mackiewicz

There has been a big surge of interest lately in crystal sets and one tube receivers - the early radios enjoyed by everyone on a limited budget. As more of these sets are restored by collectors, more old headphones emerge from dusty recesses of "the junk box" to be used with these "oldies." Here are a few tips to get the most out of these old phones.

First, remove the caps, carefully noting whether any spacer gaskets are inside. Replace these in the same order as removed. Carefully clean all dust and dirt from the interior of the receivers. An "air blaster" can, commonly used to clean computer parts serves well here. The very fine wire in the receivers can be easily broken with a cleaning brush.

Next, examine the diaphragm. If it is rusty, or has paint flaking off, place it on a

flat surface, clean with steel wool., then give it a light coat of paint, or a thin coating of car wax. Scratch a small mark on the outside edge, then, when re-assembling, reverse the diaphragm- over the years, the diaphragms will take a "set", and should be reversed once a year.

Next, check your cleaned and re-assembled phones for volume. Try reversing one wire pair on one receiver. Perhaps the cord has been replaced, and the phones are phased improperly. Of one "pushes" while the other one "pulls", your phones may sound weak.

Finally, if your phones crackle as you move around, check the cord near the two phone tips. This is the most likely place for a problem in the cord. Sometimes, cutting an inch or so off the cord here, and soldering on new tips can make a world of difference in your listening!!

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- (2) "Broadcasting in West Virginia, A History". WVBA. Pg. 31.
- (3) John Clay telephone interviews. Clay was chief engineer; WSAZ-TV Huntington.
- (4) "Radio Manufactures of the 1920's. Vol 1. Alan Douglas. Pg. 195.
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Mary Cheuvront, Ernest Thorne(95),
George Freeman, B.T. Cheuvront

STORY by

Well for what it's worth, here's the scoop. - Born Aug. 9, 1933 in Lewisburg, W.Va., moved at an early age to PA. At about 4 years old started to spend time with an Uncle who was in the Radio Service. All thru school years, I spent every weekend and summers with Uncle, helping in service shop. The last couple of years in high school, I had my own part time radio-TV-service. After graduation went to work for a local Zenith Dealer in his service shop. Then went in the Navy for 5 years as an Electronics Technician. After discharge from Navy, went to work for Lansdale Tube Co., which was later bought by Philco Corp., for 7 years as electronics maint. supervisor. The entire time at Philco, I had my full-time service business going, also. When Ford Motor bought Philco, they decided to move the Plant operations to Philadelphia. I didn't want to commute and also my own service business was growing. That was in 1965. About 15 years ago we started to phase out radio/TV service and concentrate our efforts to the Pro Audio world. We now maintain a full fleet of trucks, tractor trailers and straight trucks to service our accounts.

My son, Bill, Jr. is in business with me. He did his first show at the age of 15 and is now well established and respected in the Pro Audio world. We now provide audio service on the road just under 300

days a year to all types of audience-type events, including 8 major state fairs. We also design and install commercial sound systems in permanent locations. We maintain a full service shop in a little place called Bucktown, PA. - just outside Pottstown.

As for my microphone collection, I have always been around mics, amps and speakers, as it was part of our radio and TV business. Didn't really start to gather things into one place until 10- 12 years ago. Boy, how things have changed. One of the first PA systems we had was a little 12 watt National Union amplifier, two 12" Electro Dynamic cone speakers with their own power supplies - 1 mic and 1 phono input. Today our large system contains 60 - 70 speakers, each 1000 watts with mixing consoles that will control 50 mics. My current collection of old mics consist of between 150 - 200 and is growing. 



President McIntyre & Museum President Bourne present the "People's Choice Award Award" to Bill Fitch

MEMBER LETTER

Dear Lloyd,

What a great convention! Congratulations!

Thanks very much to your judges and officers for my awards on the old equipment contest. I've put a portion of it in my store window in busy downtown Madison for the community and the many tourists to see.

I trust you got the photocopies Mary Cheuvront made for you of the narrative from my presentation plus the letter from Bob Cheuvront to me.

As Huntington and West Virginia attendees discussed the display with me I could see they were trying to make the connection between me and where they live. Well here it is:

My dad was a steelworker working swing shift at the Youngstown Sheet & Tube Company for 40 years at Youngstown, Ohio. He was often awake when everyone else was asleep and vice versa. WWVA was a frequent companion of dad's.

In my last job on the air as news director of WDRC AM/FM, Hartford, CT my two newsmen were both products of small market West Virginia stations. Mike Stein started his broadcast career at WLOH, Princeton, WV. These are calls not documented in the WVBA history as I recall. Mike then joined WJLS, Beckley, WV. Mike now writes, edits and produces Peter Jennings' ABC TV newscast each night, did the same thing for Harry Reasoner on ABC TV, was news director of WNEW in New York.

Bud Steele is senior morning news anchor at WMAL, Washington, DC where he's been for 22 years. He was a news anchor on the ABC Radio net prior to that. Bud works part time at the Voice of America. He started in radio at WBTH, Williamson, WV.

In the early '80s I was regional manager for the National Association of Broadcasters responsible for all radio and TV stations in West Virginia. Some of my best memories of this position were as a result of West Virginia broadcasters I visited.

When I visited Dick Hostler at Findlay, OH back in 1989 and saw the Air-Ola made in Huntington I just knew it would be important to West Virginia collectors and broadcasts so I bought it on February 25th for \$30.00

It took 13 hours of poring over 1925 newspaper microfilm to find the news story announcing Air-Ola and JUst-riTE.

John Clay, former chief engineer at WSAZ-TV connected me with B.T. Cheuvront, the 71-year-old son of Air-Ola founder, C.V. Cheuvront., and we were launched!

If you want to use any of this rambling to set the stage for some of the narrative in the Gazette you're welcome to. Otherwise it will background for you and the other WV folks for conversation.

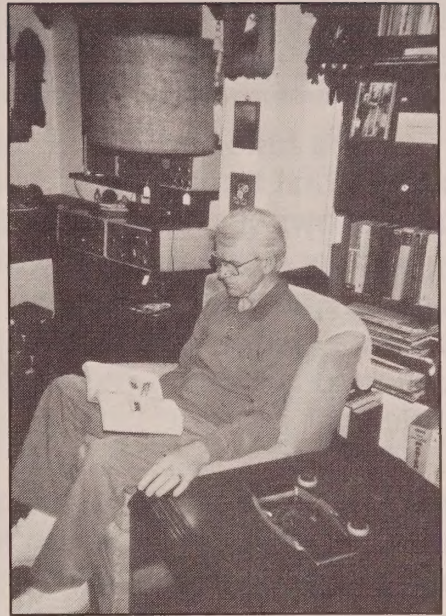
Local researcher Nina Johnson at the Cabell County library has promised me she'll continue looking for the link between Air-Ola's last days when Majestic went belly-up and Air-Ola officer and stockholder Wm. G. Evans Jr. being head of the Crosley division of Huntington Wholesale Furniture Co.

Thanks for some of my most rewarding hours in this hobby of ours.

Most Sincerely, Geo. Freeman

Continued From Page 38

never tried to remove the chassis from a Chairside-get ready for "fun and games" not to mention sore joints and muscles, bumped head, scratched hands (again!), and more words of irreverent utterance. Chassis restoration consisted of many hours of replacing capacitors and dial cord, replacing wiring (bad insulation-typical of some Zenith models), testing/replacing tubes, and of course much time spent with Go-Jo and steel wool. The last operation (cleaning) is an exercise in futility- who would ever pick up, roll on its side, a 100 pound radio cabinet, just to look at the chassis?



After all this work, the time for joyful jubilee was at hand - will it work? Plugging it in to a Powerstat, and slowly advancing the voltage while carefully watching the current meter, the pilot lights grew more brilliant, as I watched the glow in the tubes increase (mainly the rectifier), and finally I heard "music to my ears"- the radio was playing beautifully.

All of the restoration work was not in vain! Once again, after many hours of work, another radio was taken from almost oblivion, restored, and has once again taken its place along the side of the comfortable chair, in a warm cozy room, where already, this winter, we have enjoyed its music and cabinet beauty.

Now you know about my secret love affair, the Zenith Chairside Model 7S681. 

Press Release

Middletown, NY - The Fourth Annual "Old Time Radio and Phonograph Show" will be held on Saturday, October 23, 1993 from 8 a.m. to 4 p.m. at its new location at the Holiday Inn Middletown, Exit 122 off Route 117, Middletown, New York.

For the first time, this is an all-indoor show. There will be a \$1.00 admission charge for the public. Refreshments will be available.

Sponsored by the Hudson Valley Antique Radio & Phonograph Society, the show will feature demonstrations of antique radio and phonograph equipment several times during the day. The show is the only

one of its kind in Orange county. Growing larger every year, hundreds of collectors attend, and exhibitors representing at least five states participate each year. Some items which may be available at the show include console and tabletop radios and phonographs, advertising, parts, manuals, Books, and collectibles related to radios and phonographs. For more information, directions or exhibitor information, please call Gramm-O-Phone Antiques (914) 427-2602 (ask for John or Linda) or Victorian Talking Machine Co. (914) 561-0132 (ask for Geoff or Judy) between 6 and 9 p.m.

NEWS FROM WEST VIRGINIA

It's June and Cabell County's first tornado in 43 years touches down just east of Huntington, another storm the following evening repeatedly knocks out the museum lighting. The next day, a tire blow-out disables one of the shuttle vans on a one lane portion of I-64, where a new bridge is under construction. A false fire alarm sounds at the Downtown Holiday Inn. What is going on here? Well, it's the 1993 ARCA convention.

Happily, we all overcame these interruptions by Mother Nature and some man-made machinery, and in the end everything came out on the positive side. The members of West Virginia Chapter of ARCA were pleased to meet and greet fellow ARCA members from so many states and countries. The museum received some very nice donations of old equipment, some of which is already on display. A special "Thank You" goes out to all who kindly donated equipment. Especially Ray Hill of Beaver, PA & Bill Fitch of Pottstown, PA.

Also Thank you John Haught for donating your award winning homebuilt.

The West Virginia Chapter wishes to thank the following people for their help in making the 1993 ARCA Convention a success:

Art Malcolm of the Collis P. Huntington Railroad Historical Society, Also Mr. & Mrs. A. Michael Perry & family for allowing us to tour their museum.

Thanks too, to Jim Duffield for his impersonations of radio pioneers. (Jim also wrote the script and made the props), to Randy Damron and his brother Jim Damron for their part in the pioneers presentation, Patsy McIntyre on script work up and Chris Spradling on props. To Larry Anderson, General Manager of Radio Station WWVA, Wheeling WV, thanks for being our guest speaker, and the special invitation to Wheeling in January.

Since the last issue of ARCA Gazette, the museum has been featured on two separate weekends on CNN, and also on NBC radio in Colorado.

I regret that I must end this report on such a sad note, but Mrs. Violet Moore of Cross Lanes, Charleston suffered a heart attack just before the convention, and died June 15th. Mrs. Moore was the widow of J. A. Moore, a long time ARCA member and WV Chapter benefactor. She was 78 years old and a life member of the museum. She is survived by two sons, Joseph Moore and John Moore. She also leaves two daughters, Nancy M'Chartney and Ann Thompson. Both Mr. & Mrs. Moore had contributed greatly to the radio collectors hobby. The museum library and the ARCA Editorial Award are named in memory of Mr. Moore. Mrs. Moore had accepted an invitation to speak at the banquet and awards session of the 1993 convention.

Zane W. Parsons
N8OLD, Reporter 

Video Tape Review

Nicola Tesla - The Genius who Lit the World

Supplier: Barnes & Noble, 126 Fifth Avenue, New York, NY 10011. Price \$19.95 plus \$3.50 S & H.

Tesla enthusiasts will welcome this documentary video tapes (VHS) of the life and achievements of Nicola Tesla, son of a Serbian Greek Orthodox minister. The tape was produced in 1991 by the Tesla Memorial Society of Laqckawanna, NY. While its running time is only 27 minutes, this reviewer nevertheless considers his purchase worthwhile.

Although many do not think of Tesla as a radio pioneer, for he was primarily an electrical power engineer, Tesla nevertheless is given six pages in Orriz Dunlap's "Radio's 100 Men of Science". His academic training was that of an electrical engineer, and it was while working in Budapest with Hungary's telephone company that he demonstrated the generation of rotating magnetic fields in connection with his work on motors. From there, Tesla went to Paris where he invented the induction motor.

Coming to the United States in 1884, Tesla accepted a position with Thomas Edison for whom he built motors and generators. Thence followed the "war of the currents", AC vs DC. Edison strongly favored the use of DC for generation, transmission and motors. Tesla, who regarded the need for commutators and brushes on DC machines as highly objectionable, favored alternating current machines.

Thus, in 1887, Tesla left Edison to start his own company, where he developed and patented the polyphase system of generators, motors and transformers. The following year Tesla delivered a paper before a meeting of the AIEE which so impressed George Westinghouse that he purchased patent rights from Tesla. Shortly thereafter, Tesla joined the Westinghouse organization where he continued development of his polyphase system which is the basis of our electrical power system today.

Back to the "war of the currents", in 1893, Westinghouse (AC) outbid Edison (DC) and won the contract to provide electric lighting for the Colombian Exposition in Chicago. Later that same year, Westinghouse built the first two Niagara polyphase generators which supplied electric power to Buffalo via a 22-mile high-voltage transmission line. The name plates on these generators listed nine of Tesla's patents.

Tesla invented his "Tesla Coil" in 1891. He sought at one time to use a giant Tesla Coil as the basis of a wireless system for transmitting both power and messages. In 1893, Tesla delivered before a meeting of the Franklin Institute in Philadelphia a paper describing his four-circuit wireless telegraph system. Years later, patents on this system were cited as being prior to some of Marconi's developments. In 1895, Tesla demonstrated a radio-controlled model boat - the granddaddy of today's radio-controlled model airplanes.

Tesla died, at age 86, on January 7, 1943, in his rooms in the Hotel New Yorker which had been his home for a number of years.

Reviewed by Bill Denk, W3IGU

Continued From Page 15

radio artifacts. I have since seen them displayed at the beautiful museum in downtown Harrisburg, PA.

After the formal meeting at the Erie County Historical Society the party ended up at Jim Kreuzer's house where Harry told us that he had written a pair of articles on the superheterodyne concept for Radio News sometime in early 1920. He wondered if it would be possible to ever find those articles again. If you know Jim Kreuzer you know that he has just about every issue of Radio News ever printed and in a few minutes they found Harry's articles in the February and March 1920 issues.

Harry thought that was great and asked whether our club could make him some copies. We said of course we could and asked him how many he would like. "Make 1,000 copies" Harry said! And we did. These reprints include a picture of Harry at our meet with his hand on a second Harmonic Radiola. He also

signed both of the original articles so his signature appears twice on the reprint. Then, when it was all done, Harry gave our club, the NFWA, 500 of the copies plus the biggest donation by far that we have ever received. We used his money to build a beautiful antique radio store front. It was placed in a room at the Amherst, NY museum and we display our members' old radios behind it in an exhibit which we change annually.

My entry in the ARCA 93 contest was a copy of Harry's reprint, a copy of the original Radio News magazine and a description of the story behind it. Incidentally, since the NFWA really made the reprint the financial portion of the Harry Houck award was made to our club but I'm proudly displaying the award plaque in my family room.

My other entries in the ARCA 93 contest included a British BTH double detector crystal set with BTH phones and an Adam and Eve Novelty transistor set. You might find it interesting that I purchased both of these sets at the most recent AWA / BVWS meet in Harpenden, England.



Member Letter:

Greetings:

Just a quick fax (note) to let you know the GAZETTE is really looking great!

If I can ever get some help in this weather business, I hope to get back to a Meet or two.

Keep up the good work everyone.

Sincerely,

Rod Phillips

PO Box 684

Bryn Mawr, PA 19010



FREE ADS

Up to 12 Gazette lines of copy are available to ARCA Members. We do ask that you print or type your ad on a separate sheet of paper, and be sure to include your name and address. We reserve the right to edit all ads. ARCA is not responsible for any transactions.

Owing to time constraints, we cannot extensively proofread names, addresses, or numbers. If a mistake appears in your listing, please notify the GAZETTE and we will print a correction in the next available issue.

FOR SALE: Entire collection:

Consoles, table radios, parts, tubes & test equip., sold as lot & pick up only, no list or cherry picking. Dick Haynes (K9RGH), 12511 S. 83rd Ave., Palos Park, IL 60464; 708/448-4577.

FOR SALE: Fisher manuals (copies) & some parts. Al Pugliese, 27 Daleham St., Staten Island, NY 10308; 718/948-7489, evening.

FOR SALE: Many of your favorite old-time radio shows on tape cassettes. Select the shows you want and purchase them by the hour. Fast, friendly service.

Send for our catalog listing, nearly 5,000 arranged by category & title, \$2, **plus** P&H. Erstwhile Radio, P. O. Box 2284, Peabody, MA 01960.

FOR SALE: Atwater Kent 20 w/horn & tubes. Hugh Metcalf, 333 Palomar, Lodi, CA 95242; 209/369-7349.

FOR SALE: British valve and wireless publications and ephemera 1925-1960. Early Magnavox R3B base/driver; several battery sets. Ten- page list, 58¢ loose U.S. stamps. Roger Hart, 4533 Harvard Ave., Montreal, Quebec, Canada, H4A 2X3; (514) 483-3857.

FOR SALE: (or trade): Misc. collectible tubes, some good, some display, long SASE. for list. Sam Wrenn, 2314 Seminole #1207, Arlington, TX 76010.

WANTED: '20-'23 *Citizens Radio Callbook Magazines*; '24-'26 *Citizens Radio Amateur Callbook Magazines* (Flying Horse Cover); '22-'24 *Dept. of Commerce Radio Amateur Call-books*; '13 & '14-'16 *Dept. of Commerce Radio Stations of the U.S.* supplements; '09-'11 & '14 *Wireless Blue Book* (wireless telegraph stations list), included U.S. amateur stations. Bob Arrowsmith, P. O. Box 166, Annandale, VA 22003; (703) 560-7161, collect.

WANTED: Paragon RA 10, RD5 & amps, may trade Grebe CR 3; Federal DX58 cabinet. Also have listing of items for sale. Merrill Bancroft, 154 S. Row

Rd., Townsend, MA 01469; 508/597-6625.

WANTED: Radio retailing magazines, especially issues prior to '33. Doug Heimstead, 1349 Hillcrest Dr., Fridley, MN 54432; 612/571-1387.

WANTED: AK 11 tuner. Will pay up to \$250 or trade AK coupled circuit tuner. Jerald Hueber, 1368 King Richard Pkwy., West Carrollton, OH 45449; 513/866-6958.

WANTED: To buy a circuit diagram for The Crosley Model 52. Robert Stapleford 1800 Randolph, Topeka, KS 66604.

FOR SALE: More than 150 Vintage Radios and Loudspeakers, with tubes, from 1920-up. Must sell in Block. Send

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for list. Ernest Sisak, 293 William St. E. Oshawa, Ontario, Canada, LIG-1K9 416-725-3424

WANTED: AK "Tonebeam" neon Tube, AK 60 (others?) Tuner Knob for Belt Drive (Hollow center with Rubber wheel) Grigsby-Grunow Majestic "70" (71,72?) - need Escutcheon Plate for Tuner Window; Dynaco 70 prints; Philco Round Tube Shields (30's), Arvin Metal Radio. John Grady PO Box 1154 Littleton MA 01451

WANTED: HRO-5AL COILS F, H, J.; HRO-50 COILS F,G,H,J; OLD HRO RECEIVERS; ALSO EH SCOTT RADIOS. CARTER ELLIOTT, 1468 PINEDALE ROAD. CHARLOTTESVILLE, VA 22901. 804-979-7383

NEW BOOK RELEASE: "Phonographics" New High Quality Book, 7 3/4" x 7", 120 pages, soft cover with a dust jacket, containing over 100 COLOR photos of Edison, Victor, etc. phonographs, phonograph toys, printed brochures, postcards, needle tins, record labels, cylinder boxes, reproducers, etc. Book is due out Sept. 1993. Send your check dated 1 Sept. for \$15.00 (postpaid) today for a pre-publication SPECIAL. After publication, the book will be \$19.00 (postpaid). Your check will not be cashed until the book is sent. Send a Stamped Envelope for a list of books, original pamphlets, needle tins, phonograph toys, crystal tins reproducers, etc. that I have for sale. Jerry Madsen 4624 West Woodland Road Edina, Minnesota 55424 (Telephone 612-926-7775 5-9pm)

WANTED: Atwater Kent Model 89; Console, 1931, Wood Highboy, Inner Quarter-Round Dial, Three Knobs, Double Sliding Front Doors, AC. I have the chassis but I am looking for the cabinet. If you have either or both, or know where I may find one, please call collect, or write. (914) 229-2764. Steve Ruggles, 107 East Market Street, Apt 8A, Hyde Park, NY 12538. Thank you.

WANTED: SE-143 Audion Control Box. Frank R. White R.O. Box 3283 Olathe, KS 66063

WANTED: 3 tube shields, dial and knobs for Philco 37-620. Dynaco stereo preamp or two monos. Dial for Philco HO-155. Carlos Martinez, 21 Colonel Irizarry Street, Cayey, Puerto Rico 00736 (809) 263-2741

WANTED: Old Radio Test Equipment manufactured by the Weston Electrical Instrument Corp. of Newark N.J. Looking for tube testers, analyzers, and meters made by weston. I am putting together a large display of Weston equipment with help from my dad who worked for Weston from 1933 until 1974. Also buying manuals, books, catalogs or any paperwork from the Weston Plant; Also any photos of Weston Equipment. Brian Rhodes 72 Mt. Herman Road Blarstown, NJ 07825 (908) 459-4583

Attention Scott Collectors, NEW. For your inspection a 4"sq. sample of speaker grill cloth. I have seen the sample and it

looks great. Send \$1.00 & LSASE to: John Okolowicz 624 Cedar Hill Road Ambler, PA. 19002.

FOR SALE: Unique step end table Radio/Phono. 1954 Airline, Model 35GSL-2770A. Bunis II, PG 16. Nice working condition. \$135. Bob Barr, 3130 Bellanca Street, Columbus, GA 31909; (706) 322-2180

WANTED: Emerson 888 Vanguard red only, very good, working. Leather case a plus. Crosley 516 tube shields. Ballast tube K55B. Gregory Sheppard, 4402 Jupiter St., Rockville, MD 20853 (301) 946-6460.

FOR SALE: (All new) 7591A, 12AX7, 5RV, 5V4GB, 6L6, 6L6WGB, 6L6GC, others. State wants. Carlos Martinez, 21 Colonel Irizarry Street, Cayey, Puerto Rico 00736 (809) 263-2741

FOR SALE: Individual antique radios and horns, or entire collection. Bill Hennen 324 Forest Ave. Aurora, IL 60505

FOR SALE: 167 issues of Radio Age complete from Sept. 1976 to Dec. 1991. Contains the entire Atwater Kent series by Ralph Williams -- \$85.00! 65 issues of the O.T.B. complete from Mar. 1977 to Nov. 1992--\$55.00! 57 issues of the Antique Radio Gazette complete from Spring 1980 to Fall 1992 plus V1N1, V2N1 and other earlier ones -- \$55.00! I will pay shipping. Fred W. Creed

VE3DZ Apt. 503 - 283 Fairway North
Kitchener, Ontario, Canada N2A 2P1
Phone: 1-519-894-5582.

FOR SALE: Grill cloth for 1930's
radios, usable in hundreds of table sets

and consoles of the 1930's, all designed
from original cloth used in these sets,
send LSASE for sample sheet w/15 great
reproduction patterns. More patterns on
order. Michael Katz, 3987 Daleview
Ave., Seaford, NY 11783; (516) 781-
6202, evening.

Member Letter:

Dear Lloyd: On January 28th. 1993 I sent a cheque for \$50.00 US funds for 5 year's membership at the old rate. Enclosed is a cheque for \$15.00 US funds to cover additional dues plus postage for 5 years. I hope that this will be satisfactory.

Yesterday my XYL Pat noticed on CNN Cable news a short clip on the museum at Huntington, W. Va. I also saw it and an old buddy being interviewed. Great show! Thought that you would like to know that ARCA got coverage up in the Great North Country. The Gazette gets better all the time. 73,

Aaron D. Solomon, VE10C.

Member Letter:

Dear Geoffrey,

Wava and I want you to know how very much we appreciated the work of Officers and Members of West Virginia ARCA in presenting one of the very best ARCA MEETS we have ever attended. This came at the time of our 52nd Anniversary and provided quite a party for us!

We especially enjoyed seeing the Museum for the first time and were very pleased with what we saw. I will contact you later on some items I would like to donate to the Museum.

Thank's again for your good work and we hope to see you in Rochester.

Sincerely,
Ross Smith

COLLECTOR BOOKS

Antique Radio Restoration & Price Guide by David & Betty Johnson, 1000 Sets	\$12.95
Guide to Old Radios, 225 pages., by David & Betty Johnson, over 350 photos	16.95
Radio Enters The Home, 128 pages., 8.5 X 11	14.95
Radio Equipment & Supplies - 168 page reprint, circa 1922, 8.5 X 11	17.95
1927 Radio Encyclopedia - Gernsback, 179 pages	11.95
*Old Time Radios! Restoration & Repair - 256 pgs. 247 illus. by Joseph Carr	16.95
Evolution of the Radio, 800 Radios - 227 pages 118 color pictures - <i>NEW</i>	22.95
Radio Art, Hard Cover - Full Color - <i>NEW</i>	29.95
*Classic Plastic Radios of the 30's and 40's by Sidel Catalin Style 200 Color Pictures	19.95
Classic TV's <i>NEW</i> 8.5 X 11 Color	16.95
Crystal Clear - <i>NEW</i>	39.95
The Portable Radio in American Life - Hard Cover - <i>NEW</i>	45.00
Meissner "How to Build" Instruction Manual 8.5 X 11, 168 pages	9.95
Short Wave Radio Manual, Official 1934, 260 pages	14.95
Vintage Radio Handbook, 263 pages, 1000 illustrations	11.95
Flick Of The Switch 1930-1950, 312 pages, 1000 illustrations	11.95
Most Often Needed Diagrams 1926-1938, 600 models	11.95
1921-1932 Collectors Guide, 264 pages, 9,000 models	11.95
Atwater Kent - 2 Volume Parts & Service Book Reprint, 24 pages. 8.5 X 11	7.95
ARVIN - The First Sixty Years, 263 pages	7.95
Radio For The Millions, a fun book, 192 pages PB	8.95
High Power Wireless Equipment, circa 1910-1911, 99 pages	9.95
Empire of the Air by Tom Lewis - <i>NEW</i>	25.00
Radios of the Baby Boom Era - See Page 32, Vol. 19, #3 for complete details. Each	16.95
Volumes 1 - 6, Radios of the Baby Boom Era. Admiral to Zenith, Complete Set	89.00
How To Build and Operate Short Wave Receivers, 72 pages	7.95
Official Radio Service Manual, 1930 Gernsback, 8.5 X 11, 356 pages	19.95
The Story of Nipper and His Masters Voice, 64 pages, illustrated	9.95
The Cat's Whisker, 50 Years of Wireless Design, HB (rediscovered copies)	14.95
Gernsback's Shortwave Library, 10 books, Vols. 1 - 10, each (specify volume)	2.25
Tesla's Experiments With Alternating Current, 170 pages	9.95
Collector's Guide to Antique Radios by Marty & Sue Bunis, 5,000 models, 400 color pictures 2nd Ed.	16.95
Fifty Years of Radio, March 1938 Issue of Hugo Gernsback's famous publication.	15.95
*Radio Manufacturers of the 1920's, Vol. 1, Very Large, by Alan Douglas	22.95
*Radio Manufacturers of the 1920's, Vol. 2, by Alan Douglas	26.95
*Radio Manufacturers of the 1920's, Vol. 3, - <i>NEW</i>	29.95
*RADIO'S - Redux Listening in Style, Color, 120 pgs. by Philip Collins - <i>NEW</i>	17.95
*Radios - The Golden Age, 120 pages. Full Color by Phil Collins	14.95
Man of High Fidelity, Edwin H. Armstrong, PB, 272 pages	3.50
Vision by Radio by C. Francis Jenkins, 140 pages	9.95
Thomas A. Edison - A Stroke of Luck, PB, 562 pages	13.95
Nikola Tesla, Inventions, Research, Writings, 496 pages PB	16.95
Tesla Coil Secrets, PB	6.95
*The Complete Talking Machine, 8 5 X 11, 183 pages. Restoration of antique phonos	19.95
Vacuum Tubes in Wireless Communication, 5.5 X 8.5. 208 pages	12.95
222 Radio Circuit Designs, 5.5 X 8.5, 271 pages	11.95
Radio Set Socket Guide, 256 Pages - <i>NEW</i>	9.95
Legacies of Edwin Howard Armstrong, 8.5 X 11, 321 pages	15.95

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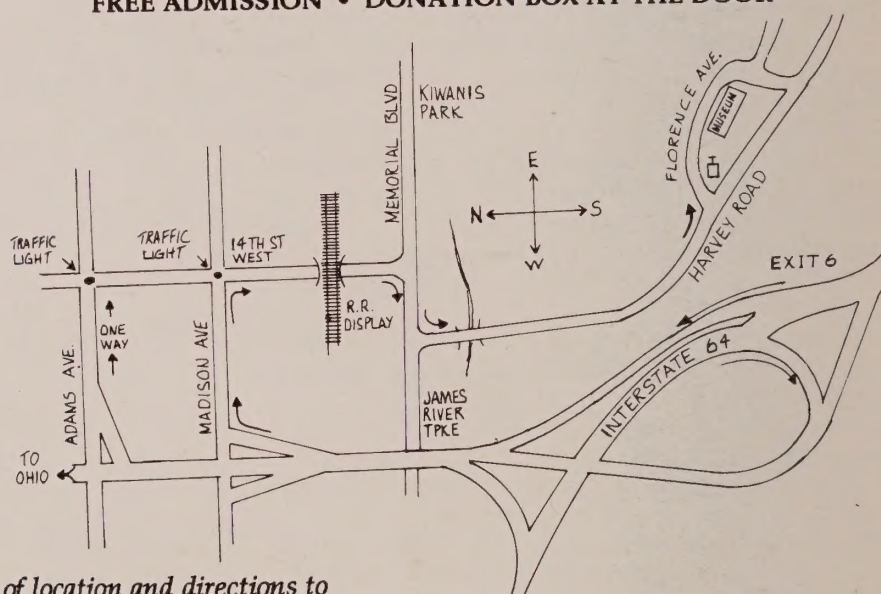
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